A limited Area Model (LAM) Intercomparison Study of the TWP-ICE Case

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LAM intercomparison focuses on

1. Can LAM simulations capture the observed wide range of dynamical processes during the TWP-ICE experiment?

2. How does surface heterogeneity, in particular the land/sea contrast, affect the cloud evolution during the active and suppressed monsoon periods?

3. Can LAM simulations reproduce the observed diurnal cycle of the convective cloud systems initiated by the mainland and islands?

4. Can LAMs realistically simulate the observed life cycle of mesoscale convective systems (MCSs)? And how do MCSs interact with the monsoonal flow to regulate the cloud systems?

5. Can LAMs statistically produce the similar cloud structure, anvil cirrus, and convective transport to those simulated by CRMs if LAMs are configured with a resolution compatible to that of CRMs?

Case Specification

* Monsoon trough: 23-25 Jan 2006 (start on 12:00Z 22 Jan)
* Suppressed monsoon: 28-30 Jan 2006 (start on 12:00Z 27 Jan)
* CRM period, 0Z 18 Jan - 0Z 3 Feb (optional)

Forcing data

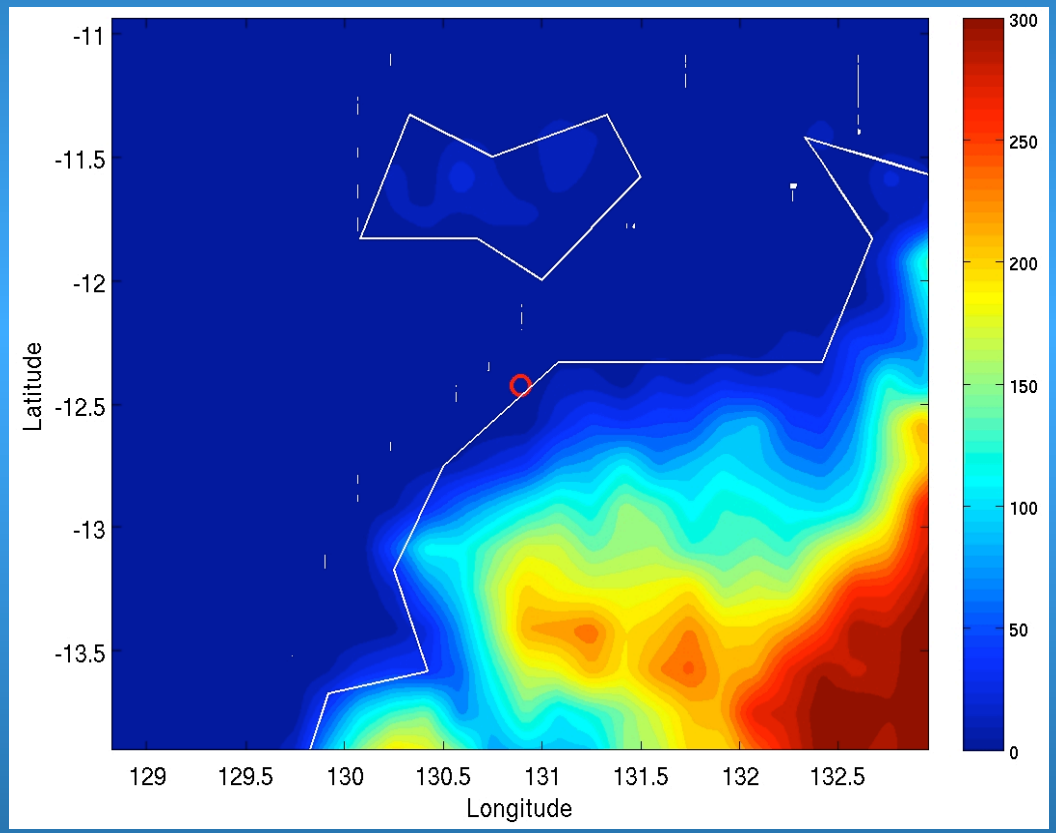
ECMWF analyses

Model domain

128.891E - 132.891E,
13.923 S - 10.925
Center: 130.891E, 12.425S

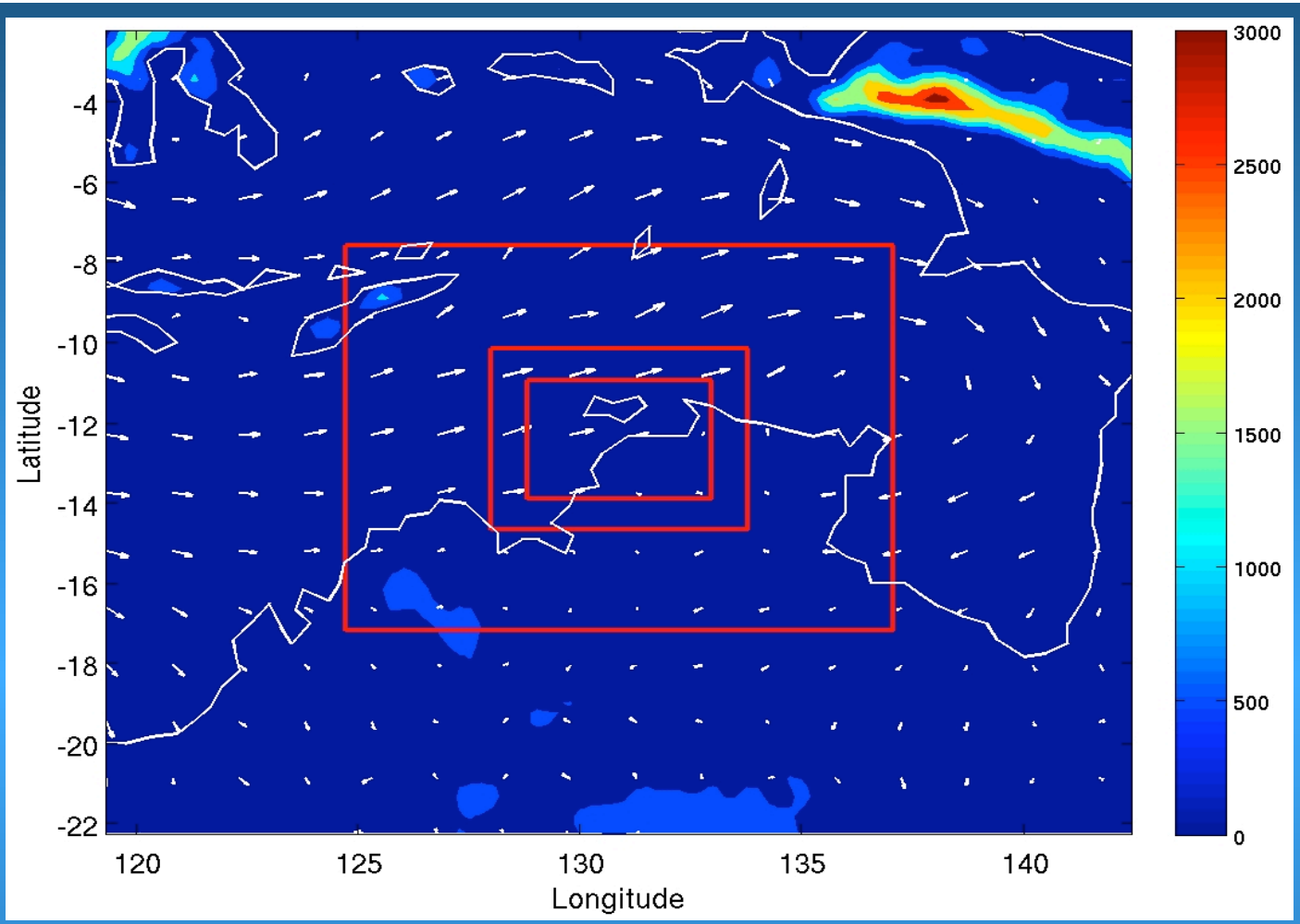
Resolution

Horizontal: 1km
Vertical: 76 levels (24km)



http://vortex.ihrc.fiu.edu/~zhup/TWP-ICE/TWP-ICE.htm

Due: November 1st



Jimy and Ming

2 nests

76 levels

WSM 6-class graupel scheme

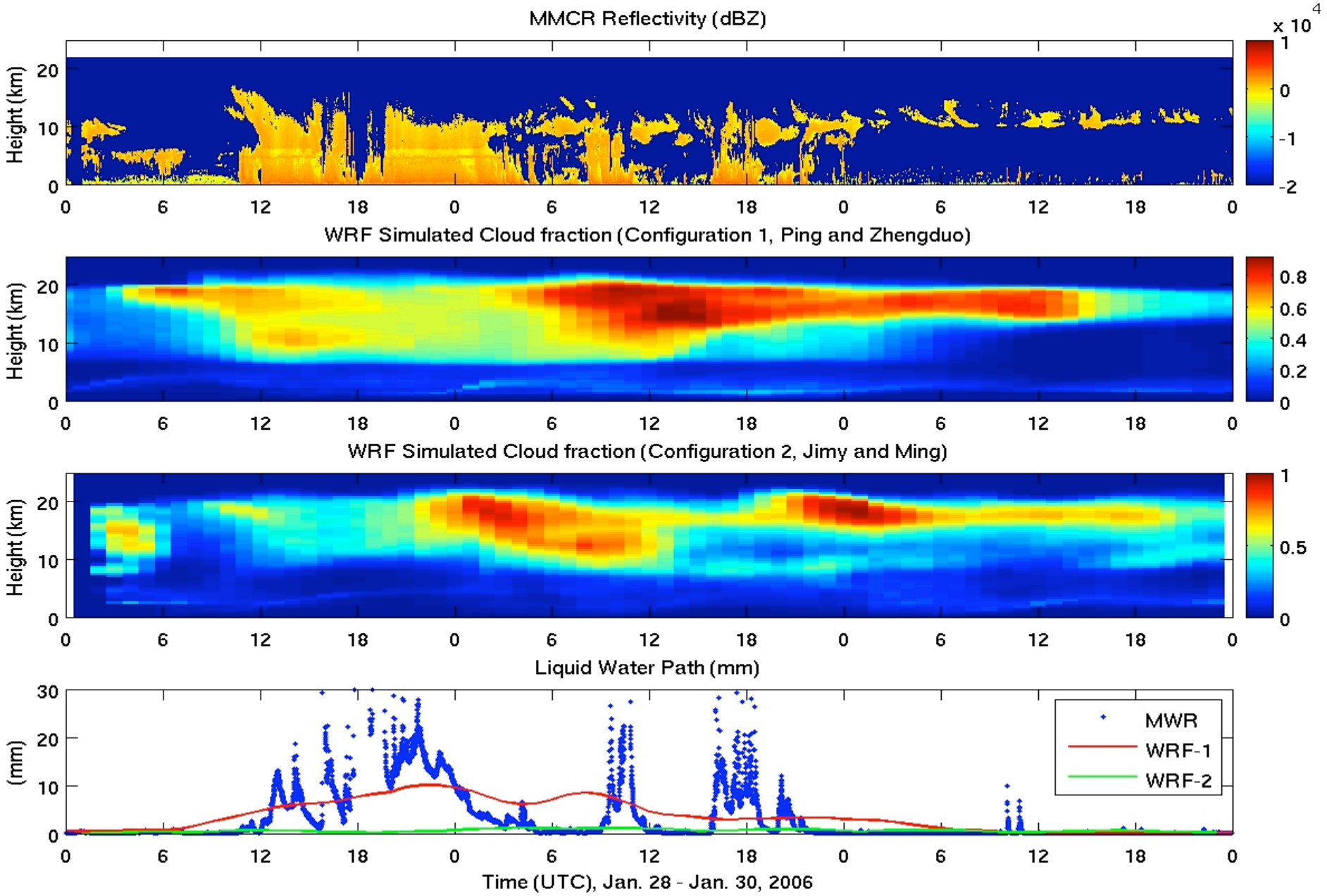
Ping and Zhengduo

3nests

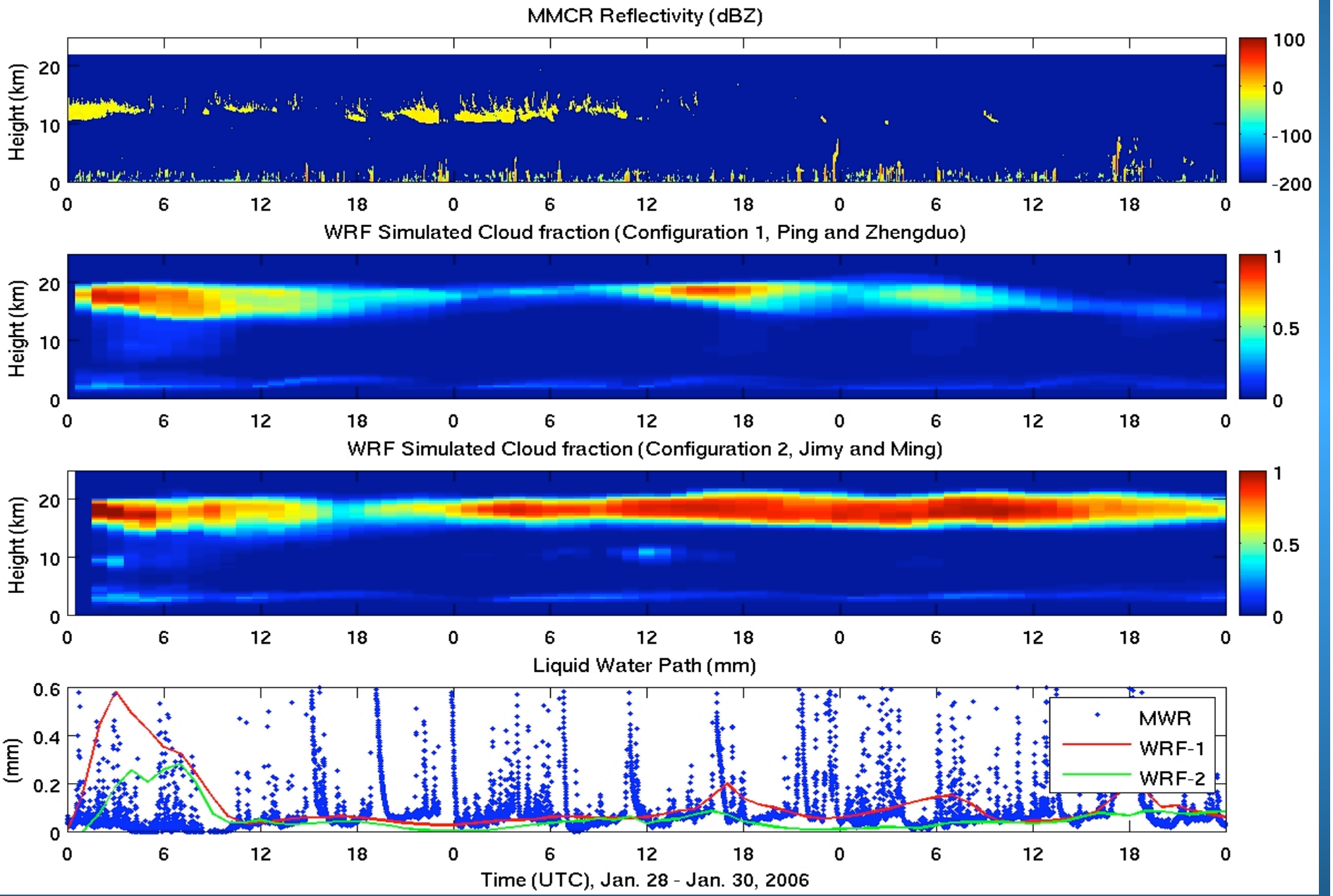
92 levels

Thompson scheme

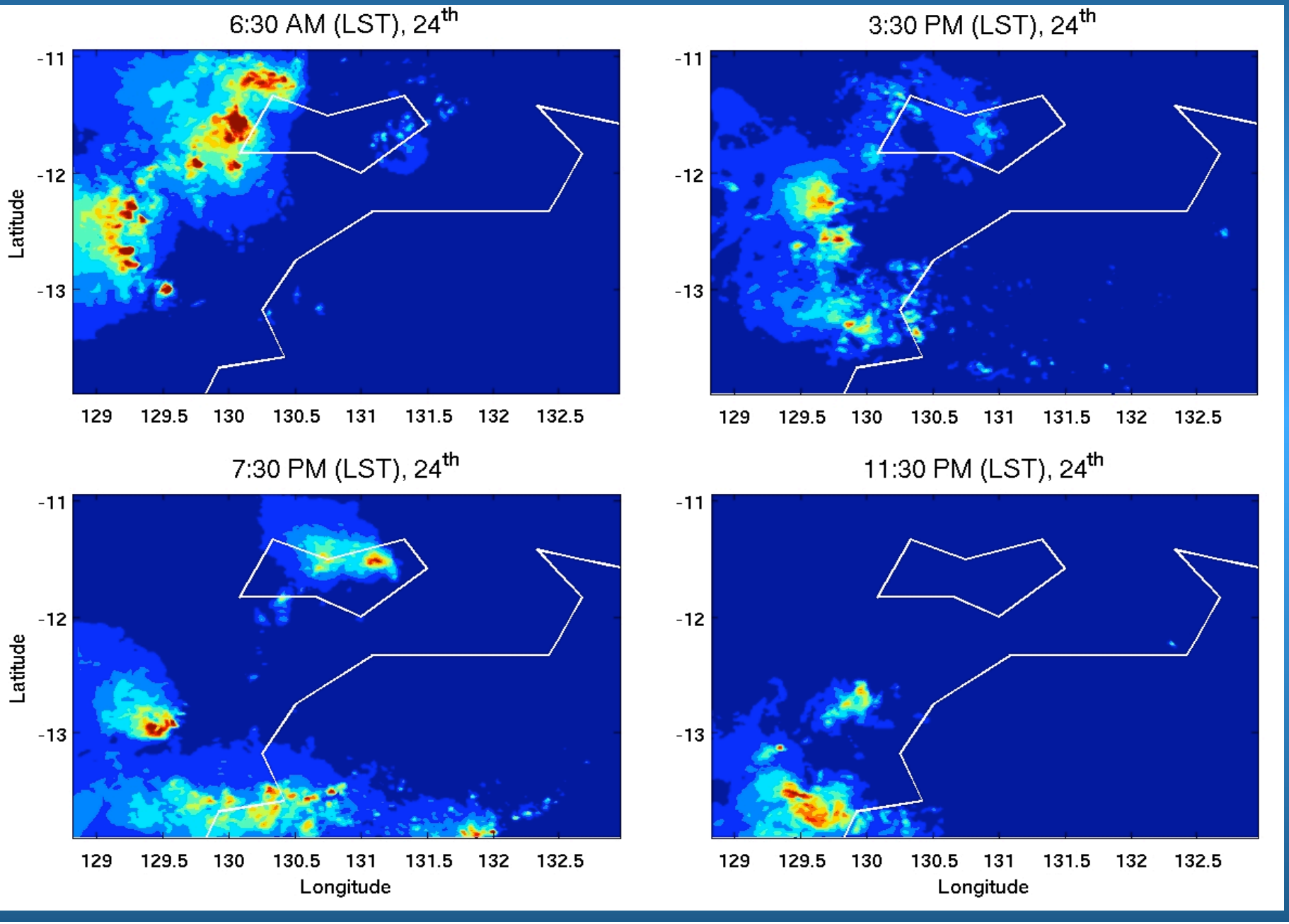
Monsoon trough: 23-25 Jan 2006 (start on 12:00Z 22 Jan)



Suppressed monsoon: 28-30 Jan 2006 (start on 12:00Z 27 Jan)



Mainland and island effect



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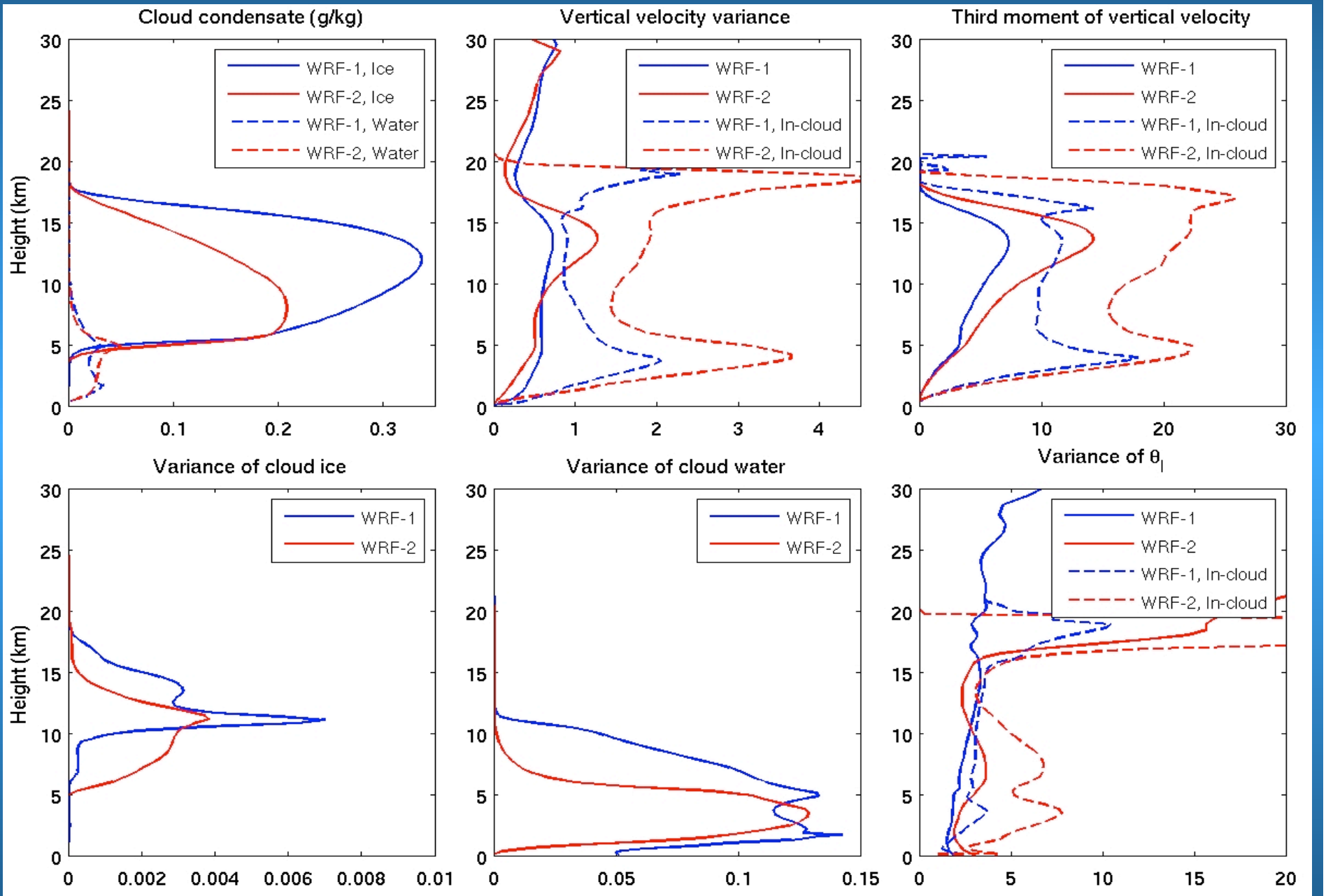
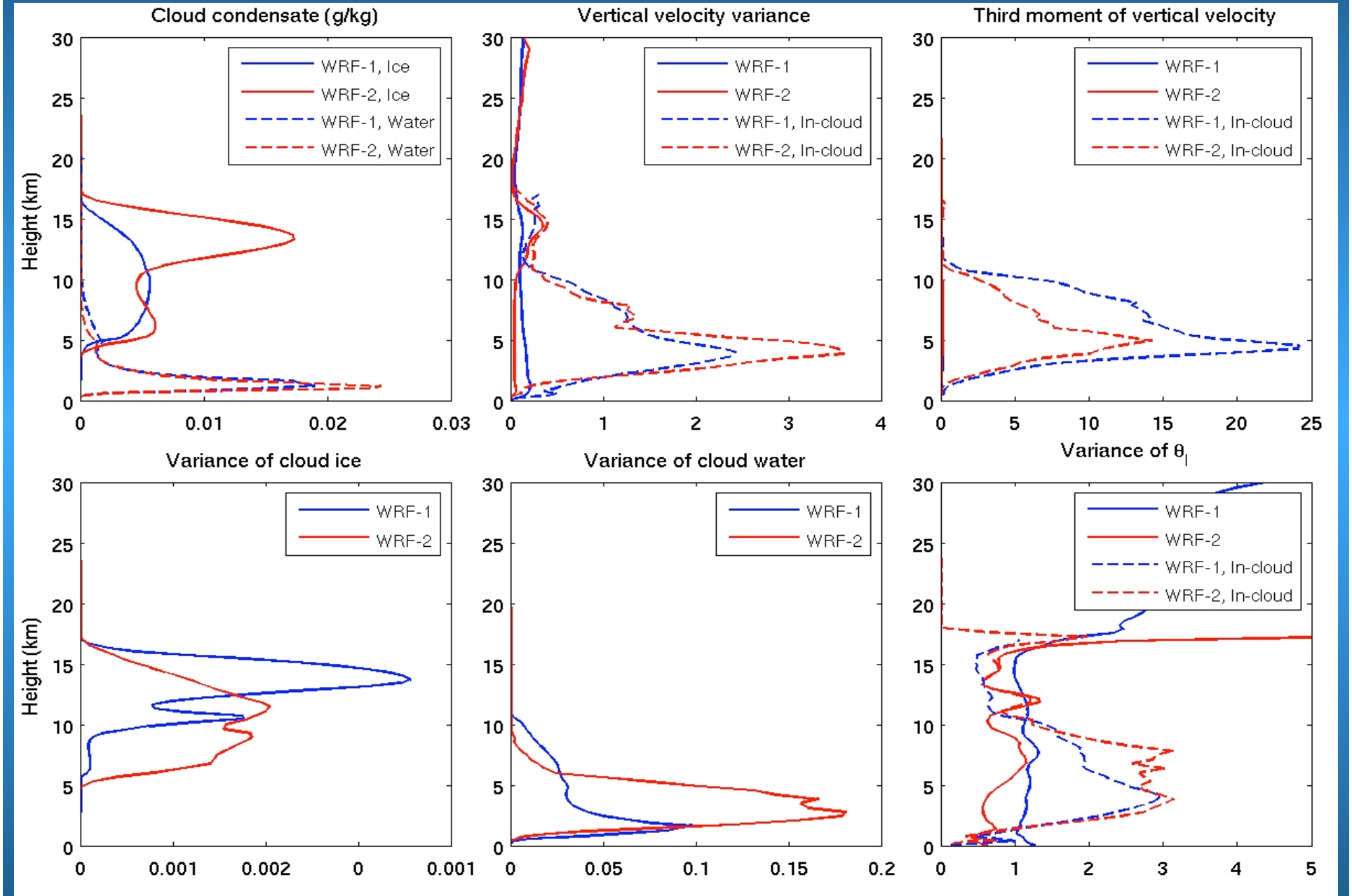


Suppressed monsoon: 28-30 Jan 2006 (start on 12:00Z 27 Jan)



Summary

1. WRF model reasonably reproduced the observed cloud fields during the monsoon trough period and the suppressed period.

2. WRF is able to capture the diurnal cycle of the convective cloud systems initiated by the mainland and islands.

3. Ice clouds appear to be more sensitive to model vertical resolution and cloud microphysics scheme then the low clouds.

4. Please submit your results!